

WHAT IS CLAIMED IS:

1. An information recording medium comprising a substrate disposed thereon a magnetic recording layer for magnetically recording information,

wherein the magnetic recording layer is in advance magnetized concentrically or spirally around a center of a disk for tracking and is disposed in such a manner that magnetized regions magnetized in different directions are alternately arranged in a radial direction of the disk.

2. An information recording medium according to claim 1, wherein the directions in which the magnetized regions are magnetized for tracking are perpendicular to a surface of the disk.

3. An information recording medium according to claim 1, wherein the substrate is disk-shaped, flexible and non-magnetic.

4. An information recording medium according to claim 1, wherein discrete servo fields are in advance magnetically recorded in the magnetic recording layer.

10023832-122104

5. An information recording medium according to claim 1, wherein the magnetized regions are each formed so as to meander at a fixed frequency.

6. An information recording medium according to claim 1, wherein a magnetized region magnetized in a predetermined direction is wider than a magnetized region magnetized in a direction which is different from the predetermined direction.

7. A method for recording and reproducing for an information recording medium, in which the information recording medium comprising a substrate disposed thereon a magnetic recording layer for magnetically recording information, the magnetic recording layer being in advance magnetized concentrically or spirally around a center of a disk for tracking and being disposed in such a manner that magnetized regions magnetized in different directions are alternately arranged in a radial direction of the disk, is used, comprising:

at least one of recording and reproducing

information, while performing tracking based on a difference in the directions in which the magnetized regions of the magnetic recording layer are magnetized.

8. A method for recording and reproducing for an information recording medium according to claim 7, wherein the magnetized regions are irradiated with linearly polarized light, a direction in which the plane of polarization of reflected light rotates corresponding to the difference in the directions in which the magnetized regions are magnetized is detected, and the tracking is performed based on the detected direction in which the plane of polarization of the reflected light rotates.

9. A method for recording and reproducing for an information recording medium according to claim 8, wherein the linearly polarized light is near field light.

10. A method for recording and reproducing for an information recording medium according to claim 7, wherein the tracking is performed by using a three-beam method in which directions in which the planes of polarization of

reflected lights of two tracking beams rotate are detected respectively and the two detected values are compared.

11. A method for recording and reproducing for an information recording medium, in which the information recording medium comprising a substrate disposed thereon a magnetic recording layer for magnetically recording information, the magnetic recording layer being in advance magnetized concentrically or spirally around a center of a disk for tracking and being disposed in such a manner that magnetized regions magnetized in different directions are alternately arranged in a radial direction of the disk, and discrete servo fields being in advance magnetically recorded in the magnetic recording layer, is used, comprising:

at least one of recording and reproducing information, while performing tracking based on a difference in the directions in which the magnetized regions of the magnetic recording layer are magnetized; and

performing sector servo based on the discretely recorded servo fields.

12. A method for recording and reproducing for an

information recording medium, in which the information recording medium comprising a substrate disposed thereon a magnetic recording layer for magnetically recording information, the magnetic recording layer being in advance magnetized concentrically or spirally around a center of a disk for tracking and being disposed in such a manner that magnetized regions magnetized in different directions are alternately arranged in a radial direction of the disk, and the magnetized regions being each formed so as to meander at a fixed frequency, is used, comprising:

at least one of recording and reproducing information, while performing tracking based on a difference in the directions in which the magnetized regions of the magnetic recording layer are magnetized; and

generating at least one of a clock signal and an address signal based on the frequency at which the magnetized regions meander.

13. A method for recording and reproducing for an information recording medium according to claim 7, wherein information is recorded in the magnetized regions.

14. A method for recording and reproducing for an information recording medium according to claim 7, wherein information is recorded in the magnetized regions by using one of a light modulation system or a magnetic modulation system.

15. A method for recording and reproducing for an information recording medium according to claim 7, wherein information is magnetically recorded in such a manner in which the magnetized regions of the magnetic recording layer are irradiated with near field light and a portion irradiated with the near field light is heated to a substantial Curie temperature, and a magnetic field having a predetermined direction thereof is applied to the portion from a magnetic head.

16. A method for recording and reproducing for an information recording medium according to claim 7, wherein information is magnetically recorded only in magnetized region magnetized in a predetermined direction.

17. A method for recording and reproducing for an

information recording medium according to claim 16,
wherein the magnetized region magnetized in the
predetermined direction is wider than a magnetized region
magnetized in a direction which is different from the
predetermined direction.

18. A method for recording and reproducing for an
information recording medium according to claim 16,
wherein the magnetized region magnetized in the
predetermined direction is divided into a plurality of tracks
and information is recorded thereon.

19. A method for recording and reproducing for an
information recording medium according to claim 10,
wherein the magnetized regions are irradiated with linearly
polarized light, a direction in which the plane of polarization
of reflected light rotates corresponding to the difference in
the directions in which the magnetized regions are
magnetized is detected, and information recorded in the
magnetized regions is read based on the detected direction
in which the plane of polarization of the reflected light
rotates.

20. A method for recording and reproducing for an information recording medium according to claim 7, wherein electric current is made generate due to magnetism of the magnetized regions by electromagnetic induction, a direction in which the electric current flows corresponding to the difference in the directions in which the magnetized regions are magnetized is detected, and information recorded in the magnetized regions is reproduced based on the detected direction in which the electric current flows.

21. A method for recording and reproducing for an information recording medium according to claim 7, wherein electrical resistance is made to change due to magnetism of the magnetized regions, and a changed amount of the electrical resistance is detected, and information recorded in the magnetized region is reproduced based on the detected changed amount of the electrical resistance,.

22. A method for recording and reproducing for an information recording medium according to claim 7, wherein at least one of recording and reproducing of information is

carried out in such a manner that the surface of the magnetic recording layer and the magnetic head are made close to each other with a distance therebetween of no greater than 100 nm on a disk-surface average.

23. An information recording medium according to claim 1, wherein the substrate is disk-shaped and smooth.

24. An information recording medium according to claim 23, wherein a direction of magnetization for tracking and a direction of magnetization for recording and reproducing information are each made perpendicular to the surface of the disk.

25. An information recording medium according to claim 23, wherein a protective layer is formed on the magnetic recording layer.

26. An information recording medium according to claim 25, wherein a lubricating film is formed on the protective layer.

10023832-122101

Sub
A,
31. A method for recording and reproducing for an information recording medium according to claim 31, wherein the predetermined direction of the magnetic field is perpendicular to the surface of the disk.

32. A method for recording and reproducing for an information recording medium according to claim 30, wherein information is recorded in the magnetic recording layer by applying the magnetic field having the predetermined direction thereof, from a side of the magnetic recording layer opposite to the base plate.

33. A method for recording and reproducing for an information recording medium according to claim 30, wherein, with the magnetic field having the predetermined direction thereof being applied from the magnetic head to the magnetized regions of the magnetic recording layer, the near field light modulated in accordance with a recording signal is applied to the magnetized regions to thereby allow magnetic recording of information.

34. A method for recording and reproducing for an

information recording medium according to claim 30,
wherein, with near field light being applied to the magnetized
regions of the magnetic recording layer, the magnetic field
having the predetermined direction thereof, which is
modulated in accordance with a recording signal, is applied
to the magnetized regions from the magnetic head to thereby
allow magnetic recording of information.

35. A method for recording and reproducing for an
information recording medium according to claim 30,
wherein the base plate is flexible and non-magnetic.

36. A method for recording and reproducing for an
information recording medium according to claim 30,
wherein information is recorded in such a manner that the
surface of the magnetic recording layer and the magnetic
head are moved close to each other with a distance
therebetween of no greater than 100 nm.

37. A method for recording and reproducing for an
information recording medium according to claim 30,
wherein the tracking is performed in such a manner that a

reflective film is formed between the base plate and the magnetic recording layer, and light reflected by the surface of the magnetic recording layer when near field light is applied to the information recording medium and light transmitted through the magnetic recording layer and reflected by the reflective film are detected.

38. A method for recording and reproducing for an information recording medium according to claim 30, wherein information is recorded by dividing a magnetized region magnetized in the predetermined direction into a plurality of tracks.

39. A method of manufacturing an information recording medium, the information recording medium comprising a magnetic recording layer for magnetically recording information, the magnetic recording layer being in advance magnetized concentrically or spirally around the center of a disk for tracking such that magnetized regions magnetized in different directions are alternately arranged in a radial direction of the disk, said method comprising the steps of:

magnetizing the entire magnetic recording layer in a

10023832-122101

predetermined direction;

adhering a magnetic layer of a disk-shaped master carrier to a surface of the magnetic recording layer of the information recording medium, the master carrier being formed concentrically or spirally around a center of the disk and having an unevenness pattern in which at least convex portions are covered by the magnetic layer; and

applying a magnetic field having a direction thereof which is different from the predetermined direction, to the magnetic recording layer via the magnetic layer to thereby reverse a magnetized direction of a portion of the magnetic recording layer to which the magnetic layer adheres.

10023832.122101